

1 **SYSTEM AND METHOD FOR PROVIDING WEB-BASED USER INTERFACE**
2 **TO LEGACY, PERSONAL-LINES INSURANCE APPLICATIONS**

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4 This application claims the benefit of U.S. Provisional Application No.
5 60/200,491 titled "TRAVNET," filed April 28, 2000, and U.S. Provisional Application
6 No. 60/219,691 entitled "SYSTEM AND METHOD FOR PROVIDING WEB-BASED
7 USER INTERFACE TO LEGACY INSURANCE APPLICATIONS," filed July 21,
8 2000, both of which are herein incorporated by reference in their entireties.

9
10 BACKGROUND OF THE INVENTION

11 Field of the Invention

12 The present invention relates to a system and method for providing web-based
13 data processing services to insurance agents and customer service representatives. More
14 specifically, the present invention relates to a system and method for providing a web-
15 based interface to an insurance data processing system to increase the functionality and
16 ease of use in providing information about personal-lines insurance policies to users,
17 issuing personal-lines insurance quotes and policies, modifying policies, etc. As referred
18 to herein, personal-lines insurance policies relate to insurance policies for individuals'
19 needs, as opposed to commercial and/or business needs. Examples of personal-lines
20 insurance are homeowner insurance, auto insurance, boat/yacht insurance, life insurance,
21 health insurance, etc.

22
23 Description of the Related Art

24 Insurance companies have traditionally used large, centralized data processing
25 systems that run on mainframe computers. Because of the large amounts of data that
26 must be handled and because of the criticality of the system, mainframes have provided
27 an economical way to provide the necessary performance and reliability. As insurance
28 companies become more competitive, it is imperative that insurance agents be provided

1 an easy-to-use, user-friendly interface with which to view policy information, issue
2 insurance quotes and policies, and so on.

3 Since many insurance agents have the ability to issue policies from more than one
4 insurance company, it is often ease-of-use that makes the sale when prices are relatively
5 similar. Additionally, insurance companies have invested significant resources into
6 legacy mainframe applications. It would be very costly to completely rewrite mainframe
7 applications for another computing environment.

8

9 BRIEF SUMMARY OF THE INVENTION

10 There is a need for a web-based insurance data processing system and method
11 that provide the necessary reliability, performance, and ease-of-use. There is also a need
12 for a system and method that can provide a modern, user-friendly interface to a legacy
13 insurance system, such as a mainframe system, to provide information about personal-
14 lines insurance policies to users, issue personal-lines insurance quotes and policies,
15 modify policies, etc.

16 Accordingly, the preferred embodiments of the present invention provide a
17 system and method for a web-based graphical user interface (GUI) to an insurance data
18 processing system (insurance system) that is fast and simple to navigate.

19 The preferred embodiments of the present invention also provide a system and
20 method for a user-friendly interface to an insurance system that requires minimal
21 training, increases productivity, and saves money.

22 The preferred embodiments of the present invention further provide a system and
23 method for a web-based interface to an insurance system that integrates use of Internet
24 technology in business work flows, provides dynamic data entry for insurance coverage
25 packages and pricing programs that are most often used, and offers easy access to value-
26 added products and services.

27 The preferred embodiments of the present invention also provide a system and
28 method for a web-based interface to an insurance system that enables local printing of

1 insurance applications, proposals and forms to facilitate immediate delivery of
2 professional-quality proposals to customers and on-demand printing of applications,
3 forms and binders.

4 The preferred embodiments of the present invention additionally provide a
5 system and method for a web-based interface to an insurance system that includes
6 intuitive graphical features such as trees, buttons, hyperlinks, navigation bars, drop-
7 down boxes, and dynamic screen painting.

8 The preferred embodiments of the present invention also provide a system and
9 method for a web-based interface to an insurance system that continues process flow
10 based on data capture, prompts only for pertinent questions, and displays specific
11 coverage and deductible options that apply to form, jurisdiction and market.

12 BRIEF DESCRIPTION OF THE DRAWINGS

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14 The preferred embodiments are illustrated by way of example and not limited in
15 the following figures, in which:

16 FIG. 1A depicts a high level architecture for a web-based graphical user interface
17 (GUI) to a host insurance data process system (insurance system) and its insurance
18 applications, in accordance with an embodiment of the present invention;

19 FIG. 1B depicts an application architecture showing a tier diagram for a web-
20 based GUI to an insurance system and its insurance applications, in accordance with an
21 embodiment of the present invention;

22 FIG. 1C depicts a technical architecture, with reference to FIG. 1A, of the
23 application architecture and tier diagram shown in FIG. 1B, in accordance with an
24 embodiment of the present invention;

25 FIG. 1D depicts an infrastructure of the technical architecture shown in FIG. 1C,
26 in accordance with an embodiment of the present invention;

27 FIG. 1E depicts in general a redundancy aspect of the technical architecture
28 shown in FIGs. 1B-D, in accordance with an embodiment of the present invention;

1 FIG. 1F depicts a particular redundancy architecture of FIG. 1E, in accordance
2 with an embodiment of the present invention;

3 FIG. 1G depicts a components and services framework in accordance with an
4 embodiment of the present invention;

5 FIG. 2A depicts a user's desktop screen with a window opened for accessing a
6 private network to gain entry to the GUI and insurance system, in accordance with an
7 embodiment of the present invention;

8 FIG. 2B depicts a screen for verifying the user login identification and password
9 for the private network accessed by the screen in FIG. 2A, in accordance with an
10 embodiment of the present invention;

11 FIG. 2C depicts a screen for user selection of a web site for a desired insurance
12 system after a successful logon to the private network, in accordance with an
13 embodiment of the present invention;

14 FIGs. 3A-C depict flowcharts for a process to issue an insurance quote, in
15 accordance with an embodiment of the present invention;

16 FIGs. 4A-C depict flowcharts for a process to issue an insurance policy, in
17 accordance with an embodiment of the present invention;

18 FIG. 5 depicts a logon screen for accessing insurance applications via a web-
19 based GUI, in accordance with an embodiment of the present invention;

20 FIGs. 6A-B depict GUI logon screens for insurance applications, in accordance
21 with an embodiment of the present invention;

22 FIG. 7 depicts a GUI Welcome screen for an insurance quote process, in
23 accordance with an embodiment of the present invention;

24 FIGs. 8A-D depict a Customer Information web page of the GUI for an insurance
25 quote process, in accordance with an embodiment of the present invention;

26 FIG. 9 depicts a navigation tree employed by the GUI, in accordance with an
27 embodiment of the present invention;

1 FIG. 10A-B depict a Basic Policy Information web page of the GUI for an
2 insurance quote process, in accordance with an embodiment of the present invention

3 FIGs. 11A-B depict a Policy Detail web page of the GUI for an insurance quote
4 process, in accordance with an embodiment of the present invention;

5 FIG. 12 depicts an initial web page of the GUI for a process to issue an auto
6 insurance policy, in accordance with an embodiment of the present invention;

7 FIGs. 13A-B depict a Customer Selection web page of the GUI for a process to
8 issue an auto insurance policy, in accordance with an embodiment of the present
9 invention;

10 FIG. 14 depicts a Customer Insert web page of the GUI for a process to issue an
11 auto insurance policy, in accordance with an embodiment of the present invention;

12 FIG. 15 depicts a Determinants – Initial Page of the GUI for a process to issue an
13 auto insurance policy, in accordance with an embodiment of the present invention;

14 FIG. 16 depicts a Determinants – Transaction and Policy Type web page of the
15 GUI for a process to issue an auto insurance policy, in accordance with an embodiment
16 of the present invention;

17 FIG. 17 depicts a Determinants – Pricing Level web page of the GUI for a
18 process to issue an auto insurance policy, in accordance with an embodiment of the
19 present invention;

20 FIGs. 18A-B depict a Determinants web page of the GUI for a process to issue an
21 auto insurance policy, in accordance with an embodiment of the present invention;

22 FIGs. 19A-C depict a Policy Detail web page of the GUI for a process to issue an
23 auto insurance policy, in accordance with an embodiment of the present invention;

24 FIGs. 20A-B depict a Policy Eligibility web page of the GUI for a process to
25 issue an auto insurance policy, in accordance with an embodiment of the present
26 invention;

1 FIG. 21 depicts a Vehicle – Determinants web page of the GUI for a process to
2 issue an auto insurance policy, in accordance with an embodiment of the present
3 invention;

4 FIGs. 22A-B depict a Vehicle – Subject web page of the GUI for a process to
5 issue an auto insurance policy or an insurance quote, in accordance with an embodiment
6 of the present invention;

7 FIGs. 23A-B depict a Operator Information web page of the GUI for a process to
8 issue an auto insurance policy or an insurance quote, in accordance with an embodiment
9 of the present invention;

10 FIG. 24 depicts a Percentage of Use web page of the GUI for a process to issue
11 an auto insurance policy or an insurance quote, in accordance with an embodiment of the
12 present invention;

13 FIGs. 25A-B depict a Coverages web page of the GUI for a process to issue an
14 auto insurance policy or an insurance quote, in accordance with an embodiment of the
15 present invention;

16 FIG. 26 depicts a Billing web page of the GUI for a process to issue an auto
17 insurance policy, in accordance with an embodiment of the present invention;

18 FIGs. 27A-B depict a Rating Results web page of the GUI for a process to issue
19 an auto insurance policy or an insurance quote, in accordance with an embodiment of the
20 present invention;

21 FIG. 28 depicts a Determinants – Initial Page of the GUI for a process to issue
22 homeowner auto insurance policy, in accordance with an embodiment of the present
23 invention;

24 FIG. 29 depicts a Determinants – Transaction and Policy Type web page of the
25 GUI for a process to issue a homeowner insurance policy, in accordance with an
26 embodiment of the present invention;

1 FIG. 30 depicts a Determinants – Premium Level web page of the GUI for a
2 process to issue a homeowner insurance policy, in accordance with an embodiment of
3 the present invention;

4 FIG. 31 depicts a Determinants – Pricing Level web page of the GUI for a
5 process to issue a homeowner insurance policy, in accordance with an embodiment of
6 the present invention;

7 FIGs. 32A-B depict a Determinants web page of the GUI for a process to issue a
8 homeowner insurance policy, in accordance with an embodiment of the present
9 invention;

10 FIGs. 33A-C depict a Policy Detail web page of the GUI for a process to issue a
11 homeowner insurance policy, in accordance with an embodiment of the present
12 invention;

13 FIGs. 34A-B depict a Policy Eligibility web page of the GUI for a process to
14 issue a homeowner insurance policy, in accordance with an embodiment of the present
15 invention;

16 FIGs. 35A-B depict a Residence Information web page of the GUI for a process
17 to issue a homeowner insurance policy, in accordance with an embodiment of the present
18 invention;

19 FIG. 36 depicts a Replacement cost web page of the GUI for a process to issue a
20 homeowner insurance policy, in accordance with an embodiment of the present
21 invention;

22 FIGs. 37A-B depict a Coverages web page of the GUI for a process to issue a
23 homeowner insurance policy, in accordance with an embodiment of the present
24 invention;

25 FIG. 38 depicts an Endorsements web page of the GUI for a process to issue a
26 homeowner insurance policy, in accordance with an embodiment of the present
27 invention;

1 FIG. 39 depicts a Billing web page of the GUI for a process to issue a
2 homeowner insurance policy, in accordance with an embodiment of the present
3 invention;

4 FIGs. 40A-B depict a Rating Results web page of the GUI for a process to issue a
5 homeowner insurance policy, in accordance with an embodiment of the present
6 invention;

7 FIG. 41 depicts a CDE Determinant – Initial Page of the GUI for a process to
8 issue an insurance policy for a water vessel, in accordance with an embodiment of the
9 present invention;

10 FIG. 42 depicts a CDE Determinant – Transaction and Policy Type page of the
11 GUI for a process to issue an insurance policy for a water vessel, in accordance with an
12 embodiment of the present invention;

13 FIG. 43 depicts a CDE Determinants page of the GUI for a process to issue an
14 insurance policy for a water vessel, in accordance with an embodiment of the present
15 invention;

16 FIG. 44 depicts a Policy Detail page of the GUI for a process to issue an
17 insurance policy for a water vessel, in accordance with an embodiment of the present
18 invention;

19 FIG. 45 depicts a Policy Eligibility page of the GUI for a process to issue an
20 insurance policy for a water vessel, in accordance with an embodiment of the present
21 invention;

22 FIGs. 46 and 47A-C depict a Vessel page of the GUI for a process to issue an
23 insurance policy for a water vessel, in accordance with an embodiment of the present
24 invention;

25 FIGs. 48A-B depict a Vessel Operator page of the GUI for a process to issue an
26 insurance policy for a water vessel, in accordance with an embodiment of the present
27 invention;

1 FIG. 49 depicts a Percentage of Use page of the GUI for a process to issue an
2 insurance policy for a water vessel, in accordance with an embodiment of the present
3 invention;

4 FIG. 50 depicts an Accidents/Violations and Inexperience page of the GUI for a
5 process to issue an insurance policy for a water vessel, in accordance with an
6 embodiment of the present invention;

7 FIG. 51 depicts a Loss Information page of the GUI for a process to issue an
8 insurance policy for a water vessel, in accordance with an embodiment of the present
9 invention;

10 FIG. 52 depicts a Coverages page of the GUI for a process to issue an insurance
11 policy for a water vessel, in accordance with an embodiment of the present invention;

12 FIG. 53 depicts an Endorsements page of the GUI for a process to issue an
13 insurance policy for a water vessel, in accordance with an embodiment of the present
14 invention;

15 FIG. 54 depicts a Billing page of the GUI for a process to issue an insurance
16 policy for a water vessel, in accordance with an embodiment of the present invention;

17 FIGs. 55A-D depict a Rating Results page of the GUI for a process to issue an
18 insurance policy for a water vessel, in accordance with an embodiment of the present
19 invention;

20 FIGs. 56A-B depict the Printing option web page of the GUI for the insurance
21 quote and issue processes.

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DETAILED DESCRIPTION OF THE INVENTION

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The present invention provides users with web-based access to an insurance data processing system (insurance system), such as a legacy insurance mainframe system, for insurance information about insurance policies to users, issuance of insurance quotes and policies, modification of policies, etc. For example, an insurance agent at a remote location using a web browser such as Netscape Communicator or Microsoft Internet

1 Explorer can access the insurance system via a web server across a public
2 communication network such as the Internet or a private communication network. One
3 private communication network commonly used by insurance agents is the Insurance
4 Value Added Network (IVAN). One feature of this approach is that all remote locations
5 can have access to a central system and uniform graphical experience without the need to
6 distribute software to each and every individual remote location.

7 The present invention also provides a mechanism for building a Web-based
8 graphical user interface (GUI) to legacy systems while leveraging the legacy
9 applications by “wrapping” each legacy application in a web-based GUI and then hiding
10 the legacy application behind that interface. According to one embodiment of the
11 present invention, the web-based GUI comprises at least one website that is provided by
12 one or more web server groups or farms, each including one or more web servers. Any
13 web-based development platform, such as the Microsoft Windows Distributed Internet
14 Architecture (WINDNA), may be used to build and deploy the web-based GUI. In other
15 words, the GUI applications may be hosted by an Internet information server (IIS), such
16 as the Microsoft IIS, and utilize a teleprocessing or transaction processing monitor (TP
17 monitor), such as the Microsoft Transaction Server (MTS) to provide the web-based
18 GUI and its website(s). The deployment of the web-based GUI of the present invention
19 also includes server site replication to ensure that the server farms contain identical
20 applications and information. Thus, legacy applications of the insurance system are
21 hidden behind the web-based GUI, and users can access those legacy applications via the
22 GUI and its website(s). The term “users” used throughout the present disclosure refers
23 to insurance agents using the web-based GUI and insurance system to serve their
24 insurance customers. Users can also refer to insurance customers themselves who are
25 authorized to access the GUI website and the retrievable insurance applications therein.
26 For website security, the GUI web servers can authenticate users with traditional
27 Microsoft Windows-based authentication mechanisms such as lightweight directory
28 access protocol (LDAP) or Active Directory. The GUI web server farms and their web

1 servers therein can then communicate with the insurance system using message queue
2 (MQ) over transmission control protocol / Internet protocol (TCP/IP).

3 According to one embodiment of the present invention, there are provided three
4 server farms for the web-based GUI to the insurance system as shown in FIG. 1A. One
5 server farm 101 may be virtually set up at a public Internet hosting site and can be
6 accessed by users 102 through the Internet 109 and IP router 110. Another server farm
7 103 may be virtually set up in a demilitarized zone (DMZ), i.e., a barrier between the
8 intranet and the Internet, and can be accessed by users 104 through private networks
9 such as the IVAN. The third server farm 105 may be virtually set up within an insurance
10 host internal network and can be accessed by users 106 through the intranet of the
11 internal network. The users 102, 104, and 106 all use the web-based GUI to access the
12 various server farms. These server farms are in turn connected to the host insurance
13 system 108, which is also located within the host internal network, via the MQ 107.
14 Security features such as data encryption, user authentication, and firewalls are used with
15 the server farms in the appropriate manner to define their virtual set-ups, even though
16 they may be physically located in one location, to prevent unauthorized use of the GUI
17 and its web servers and entry into the host insurance system 108.

18 According to an embodiment of the present invention, a software or hardware
19 load balancer 100 such as the Cisco LocalDirector can be used to load balance between
20 the web server farms 101, 103, and 105, with each web server in the server farms
21 running Windows 2000. The LocalDirector 100 load balances between the server farms
22 101, 103, and 105. If one server farm goes down, the user's state is maintained and his
23 or her session can be continued on one of the remaining server farms. Thus, the server
24 farms back up one another. Likewise, as mentioned earlier, there may be provided more
25 than one servers per server farm; thus, if one server goes down, the user's state is
26 maintained and his or her session can also be continued on another server in the same
27 server farm.

1 Some legacy applications of the insurance system embed business logic into their
2 legacy screen programs for data entry. Because the web-based GUI of the present
3 invention replaces those legacy screen programs, new code for the web-based GUI may
4 be created to ask users the appropriate questions and to make sure that appropriate
5 answers are given under the various circumstances of insurance. Some of these
6 circumstances include the various jurisdictions or states for which the insurance products
7 are requested, the various insurance products available to users from the insurance host
8 and its system, the various insurance filings, etc. For instance, in an insurance quote
9 transaction, the web-based GUI of the present invention can collect the necessary
10 information from a user and then route such information to the insurance rating engines
11 within the insurance system to generate an insurance quote for the user. If the user is
12 interested in the quote, the insurance sale process continues whereby the GUI will
13 prompt the user for additional information, such as billing information and other
14 information pertinent to the insurance policy of interest. The additional information is
15 then sent back to the issue engines of the insurance system where premium breakdowns
16 are analyzed, statistical feeds and feeds for the general ledger and advanced function
17 printing are created, etc.

18 FIG. 1B shows an application architecture and a tier diagram for accessing the
19 insurance system and its insurance applications via a web-based GUI of the present
20 invention. The web-based GUI includes the web browser 111, such as Internet Explorer
21 or Netscape Navigator, that users 102, 104, and 106 (FIG. 1A) use to access the host
22 insurance system 108. As mentioned earlier, the web-based GUI also includes web
23 servers 112, which are located in the server farms 101, 103, and 105 (FIG. 1A) and built
24 and deployed by, for example, WINDNA. The web servers 112 provide a presentation
25 service tier. The host insurance system 108 provides a business services tier and a data
26 services tier. The presentation service tier of the web browsers 112 includes a screen
27 presentation, a business service interface, and a business service access for: gathering
28 information from the users by using an interview engine to guide them to relevant

1 questions and allowable answers; sending users' information to the business services for
2 processing; receiving the results of the business services processing; and presenting
3 those results to the users. The business services tier of the host 108 includes services,
4 components, a legacy interface, rating engines, and issue systems for: receiving input
5 from the presentation services tier; interacting with the data services tier to perform the
6 business operations that were designed to be automated (e.g., reporting ordering, issue
7 processing, rating, etc.); and sending the processed results to the presentation services
8 tier. The data services tier of the host 108 includes report ordering, work management,
9 product, work in progress (WIP), and policy databases for: storing data; retrieving data;
10 maintaining data; and assuring the integrity of data.

11 FIG. 1C provides a technical architecture, with reference to FIG. 1A, of the
12 application architecture and tier diagram shown in FIG. 1B, wherein like elements are
13 labeled with like numbers. As shown, the presentation services tier includes the web
14 browsers 111, the load balancer or local director 100, the web servers 112 with an
15 associated structured query language (SQL) server 113 for maintaining the users'
16 states in the web servers 112. Just as shown in FIG. 1A, FIG. 1C shows that the web
17 servers 112 communicate with the host 108 using the MQ 107. The business services
18 tier and the data services tier at the host 108 include: the business events and business
19 rules for the business services tier and the various aforementioned databases 119 for the
20 data services tier. The host 108 further includes legacy interfaces 116 and legacy
21 database 117 for providing access to the legacy insurance applications 118.

22 According to one embodiment of the present invention, the application code for
23 the business rules and events for the business services tier can be developed using
24 Computer Associates Cool:Gen, which is a modeling tool and application generator.
25 This product provides a mechanism for developing platform independent source code for
26 the web-based system. Once an application code is developed in Cool:Gen, it can be
27 deployed to in Unix, Windows 2000, or other operating systems. In this instance, the
28 application code for the business rules and events is deployed in a Customer Information

1 Control System and/or Information Management System (CICS/IMS) environment at the
2 host 108.

3 FIG. 1D shows the infrastructure of the technical architecture in FIG. 1C, in
4 accordance with one embodiment of the present invention, with like elements labeled
5 with like numbers. As mentioned earlier, each web server 112 is built and deployed by
6 WINDNA, which includes the IIS and the MTS. As is known in the art, the IIS provides
7 the HTTP processing for the web server 112 and supports Active Server Pages (ASPs)
8 121 for dynamic processing of content from databases. The ASPs 121 retrieve functions
9 through a local hub 122 at each web server 112. The local hub 112 provides a layer
10 through which functions from the host insurance system or anywhere can be retrieved
11 and used by the ASPs 121. The web server 112 further includes a Comproxy 123
12 developed through Cool:Gen, which is used to handle communication between the web
13 server 112 and the host insurance system 108 by running the MQ client 124 for
14 connection to the MQ 107 at the host insurance system 108. As mentioned earlier, the
15 web server 112 provides the screen presentation of the presentation services tier. It also
16 allows user personalization and customization of the screen presentation and implements
17 business rules when applicable.

18 As mentioned earlier, user authentication and security for the web-based GUI of
19 the present invention are provided to the web servers 112 using traditional Microsoft
20 Windows-based authentication mechanisms such as lightweight directory access
21 protocol (LDAP) or Active Directory. According to one embodiment of the present
22 invention, authentication and security features are set up in at least one server farm 145,
23 with an LDAP server 147, separate from the web servers 112. Again, where the
24 authentication and security features are set up depend on whether the features are
25 designed for users accessing the web-based GUI of the present invention via the Internet,
26 Intranet, or a private data network.

27 According to one embodiment of the present invention, the host 108 comprises a
28 multiple virtual storage (MVS) mainframe with the CICS/IMS environment 115. There

1 is provided a remote hub 126 in the CICS/IMS 115 for accessing the business events and
 2 business rules (BR) functions 128 for the business services tier and the databases 119 for
 3 the data services tier. Like the local hub 122 in the web servers 112, the remote hub 126
 4 provides a layer through which functions from the host insurance system or anywhere
 5 can be accessed by the web servers 112 and/or the host insurance system 108. Together,
 6 the business events and business rules 128 and the databases 119 trigger access to the
 7 legacy applications via an External Action Block (EAB) 116, which is the legacy
 8 wrapper or legacy interface. Thus, the CICS/IMS 115 implements the business rules,
 9 manage inventory of the business rules, extend the business rules to the web server 112,
 10 manage inventory of services, and provide wrapping of legacy applications.

11 According to one embodiment of the present invention, the business events and
 12 rules are set up in a component and services architecture, wherein each component
 13 comprises one or more services. Each component represents an insurance subject or
 14 product made available to the users by the host insurance system; whereas, each service
 15 corresponds to an action that a user can perform for a particular component. For
 16 example, FIG. 1G shows a components and services framework with components
 17 classified in eight different groups: references, product type, quotes, customers, activity
 18 type, correspondence type, activities, and correspondence. Descriptions of the
 19 components are found in Table 1, with the current number of public operations
 20 representing examples of the number of services for each of the components.

21 **Table 1**

Acceptance Package: This component holds information on the WIP needed for interface with the Electronic Publication application for a quote. ▶ Current number of public operations: 5
Actions: This component holds data on the WIP relating to Underwriter Actions and Notations on a Quote. ▶ Current number of public operations: 11
Additional Interests (Policy Participant): This component holds data on the WIP relating to various third parties associated with a quote. ▶ Current number of public operations: 10
Agent: This component has services that wrap legacy programs for interfacing with the Agency Database. ▶ Current number of public operations: 3
Common: This component has services that are common routines for such things as parsing names and addresses.

<p>▶ Current number of public operations: 8</p> <p>Convert Score: This component has services having to do with the manipulation of credit scores, including the conversion between numeric and alpha scores. Some of the services wrap legacy programs.</p> <p>▶ Current number of public operations: 7</p>
<p>Coverage: This component holds data on the WIP about the coverages on a policy quote.</p> <p>▶ Current number of public operations: 23</p>
<p>Credit Surcharge Type: This component holds the product rules governing credits and surcharges that can be applied to policies. Used mainly by the Boat product.</p> <p>▶ Current number of public operations: 21</p>
<p>Customer: This component has services that wrap legacy programs for interfacing with the Personal Lines customer files.</p> <p>▶ Current number of public operations: 9</p>
<p>Endorsement: This component holds data on the WIP about the endorsements on a policy quote.</p> <p>▶ Current number of public operations: 11</p>
<p>Event: This component holds information about an event/activity entered into the Contact Management application.</p> <p>▶ Current number of public operations: 6</p>
<p>Event Type: This component holds information about the types of events/activities that can be entered in the Contact Management application.</p> <p>▶ Current number of public operations: 2</p>
<p>Installment Schedule: This component has services that wrap a legacy program for calculating installment payments.</p> <p>▶ Current number of public operations: 1</p>
<p>Location: This component holds data on states, and also has services for directly accessing the TAP City Database and PPC Table.</p> <p>▶ Current number of public operations: 5</p>
<p>Lookup: This component holds data for a myriad of different reference lookups.</p> <p>▶ Current number of public operations: 7</p>
<p>Loss: This component holds data on the WIP about losses, accidents, convictions, etc., associated with a quote.</p> <p>▶ Current number of public operations: 22</p>
<p>Outside Report: This component hold information in the Warehouse about requests for outside reports and the reports themselves that are received.</p> <p>▶ Current number of public operations: 31</p>
<p>Outside Report Type: This component holds information that defines the formats of outside report requests and outside report results.</p> <p>▶ Current number of public operations: 9</p>
<p>Personnel/Staff Member: This component holds data about personnel and organizations in the business service offices that are used for the contact management and work management applications.</p> <p>▶ Current number of public operations: 2</p>
<p>Policy: This component holds Policy/Quote level data on the WIP.</p> <p>▶ Current number of public operations: 80</p>
<p>Policy Subject: This component holds data on the WIP about the persons and things that are insured by a policy quote.</p> <p>▶ Current number of public operations: 27</p>
<p>Premium: This component holds information on the WIP about the premium charges for a quote, including credits and surcharges.</p> <p>▶ Current number of public operations: 11</p>
<p>Premium Type: This component holds the product rules governing premium charges for policies. Used only by the Boat product.</p> <p>▶ Current number of public operations: 20</p>
<p>Pricing Options: This component holds the product rules governing premium levels, pricing tracks and writing companies.</p>

▶ Current number of public operations: 4
Pricing Option TRV: This component has Travelers written services relating to Pricing Options.
▶ Current number of public operations: 1
Problem Log: This component holds a log of error messages related to a quote on the WIP.
▶ Current number of public operations: 5
Product Rules: This component contains product rules about Policy Types, Coverage Grant Options (Coverage and Endorsement Types), Coverage Dependencies, Limit Types, Deductible Types and Subject Types.
▶ Current number of public operations: 33
Rate Type: This component holds product rules governing premium rates. Used only by the Boat product.
▶ Current number of public operations: 20
Rating Results: This component holds data on the WIP that is returned from the policy rating systems when a quote is rated.
▶ Current number of public operations: 3
Reinsurance Type: This component holds the product rules governing premium charges for reinsurance on policies. Used only by the Boat product.
▶ Current number of public operations: 18
Script: This component holds script questions and answers for use in building dynamic facet screens.
▶ Current number of public operations: 24
Symbol: This component has services that wrap legacy programs for accessing the automobile symbol database.
▶ Current number of public operations: 3
Template: This component holds information about Templates, which are Quotes on the WIP that are not real customer quotes, but rather are contain default data used to create a new quote.
▶ Current number of public operations: 4
Transaction Log: This component hold information on the WIP relating to transactions sent to the policy rating and issue applications for quotes on the WIP.
▶ Current number of public operations: 11
Transaction Type: This component holds data that defines the allowable transaction and subtransaction type combinations by line of business, policy status and call type.
▶ Current number of public operations: 3

1

2 FIG. 1E shows in general the redundancy aspect of the technical architecture
3 depicted in FIGs. 1B-D, with like elements labeled with like numbers. As explained
4 earlier with reference to FIG. 1A, there are web servers 112 located at different locations
5 or server farms with a load balancer such as a LocalDirector 100 to load balance
6 between the server farms. The web servers sites 112 are identical to one another through
7 server site replication, and the states of the web servers sites 112 are maintained by the
8 SQL server 113 through ODBC/OLEDB. Thus, the web servers sites are redundantly
9 provided to serve as backups to one another as mentioned earlier. The web servers sites
10 112 communicate with the host insurance system 108 using MQ to access legacy
11 insurance applications such as rating engines, issue systems, billing, claim. As shown in
12 FIG. 1D, there is a CICS/IMS environment 115, complete with remote hubs for

1 providing services and components and a legacy interface to the legacy insurance
2 applications, corresponding to each of the web servers site 112. Because the web servers
3 sites 112 are replicated, their corresponding CICS/IMS environments are also replicated.

4 FIG. 1F shows a particular redundancy architecture of FIG. 1E in accordance
5 with an embodiment of the present invention, wherein like elements are labeled with like
6 numbers. A user wishing to access the web-based GUI to the host insurance system
7 must first access the web browser on his or her machine 90. The user's machine 90 then
8 communicates to the load balancer or LocalDirector 100, which load balances user
9 requests across multiple web servers sites 112. Which ever site 112 is selected to receive
10 a user request from the LocalDirector 100 then accesses a proxycfg.ini file to determine
11 the transmission type (i.e., MQ) and location (i.e., MQ name). Next, the selected web
12 servers site 112 accesses a channel table to determine an MQ Manager 107, based on the
13 determined transmission type and location, to communicate with the host insurance
14 system. Both the channel table and the proxycfg.ini reside in each web servers site 112.
15 The first entry in the channel table is designated the primary, and the second entry in the
16 channel table is designated a secondary for fail over. The selected web server 112 then
17 communicates to the host insurance system via MQ, which triggers a host transaction or
18 service from the CICS/IMS 115. If the service requires information from another
19 application, MQ is utilized as the communication interface. In this embodiment there
20 are multiple legacy systems 171-174 which MQ can access via additional MQ managers.

21 Explanation is now made with regard to users accessing the insurance system
22 with the web-based GUI of the present invention. FIG. 2A shows an access of the
23 insurance system with the GUI via a private communication network such as IVAN, in
24 accordance with an embodiment of the present invention. Here, the user must first
25 access his or her private network account by opening up the logon screen 200 for such
26 network. The "screen", referred throughout the present disclosure, displays any one of
27 the web pages residing at the website of the web-based GUI. At the logon screen 200,
28 the user must enter his or her login identification (ID) in the login profile box 250 and a

1 password in the password box 270. Once the user is successfully connected to the
2 private network, the user may also be required to validate the login ID and password
3 again in the input fields 350 and 370 of screen 300, as shown in FIG. 2B. Once the
4 user's ID and password are validated, the user is shown a screen 400, shown in FIG. 2C,
5 where the user can choose to access a web site for an insurance system, such as that of
6 Travelers Property Casualty Company, and its insurance applications in the next screen
7 450. A logon page for the insurance applications will then open up, such as screen 500
8 shown in FIG. 5, prompting the user to enter the logon ID and password for the
9 insurance applications in the input field boxes 510 and 520. If the user is one of the
10 Intranet users 106 (see FIG. 1A) of the insurance system, he or she will have an icon on
11 his or her desktop which allows direct access to the logon screen of FIG. 5. Likewise, if
12 the user is one of the Internet users 102 (see FIG. 1A), he or she may be provided an
13 Internet address, such as a uniform resource locator (URL), to access a designated
14 website with the screen shown in FIG. 5.

15 The rest of the process for accessing the insurance system via the web-based GUI
16 of the present invention is now explained with reference to the flowcharts shown in
17 FIGs. 3A-C. FIG. 5 shows entries of "047464594" and a six-character string denoted by
18 six asterisks as examples for a customer ID and password. The user is also prompted to
19 enter the desired application in the input field box 530. This is shown as S1 in FIG. 3A.
20 Once appropriate information has been entered into boxes 510, 520, and 530, the user
21 has the option to access the insurance applications by clicking on the Logon button 540
22 or to change the password by clicking on the Change Password button 550. If the user
23 chooses the latter, he or she will then have the opportunity to change the password and to
24 subsequently logon to access the insurance applications. If the user clicks on the Logon
25 button 540 without entering anything into the input field box 530 or with the wrong
26 information in the box, the GUI will return an Application pop up box to prompt the user
27 for a correct entry. FIGs. 6A-B show an example of the pop up box 610 labeled
28 "SELECT AN APPLICATION". The user can then select one of the listed applications

1 by clicking on the down arrow, highlighting and clicking on the desired application.
2 Upon the user's selection, the GUI will take the user into the appropriate application.
3 According to an embodiment of the present invention, the user can access a process for
4 issuing insurance quotes by highlighting the name "Atlas III" from the listed
5 applications in the pop up box 610 as shown in FIG. 6A. This is shown as S2 in FIG.
6 3A.

7 Once the user has successfully logged into a desired insurance application, such
8 as the insurance quote, he or she is greeted with a Welcome screen, such as the screen
9 107 shown in FIG. 7 for the "Atlas III" insurance quote application. This is shown as S3
10 in FIG. 3A. The Welcome screen 700 includes hyperlinks in the left column 710 of the
11 page as a quick navigation feature. As is understood by one skilled in the art, a
12 hyperlink comprises a graphic or text that, when clicked, allows the user to open another
13 page in the web browser window. Here, any item that is underlined acts as a hyperlink.
14 However, an item can be identified as a hyperlink by any other method that distinguishes
15 the look of the item from other plain text or graphical items in the screen 700. The
16 hyperlinks represent the various insurance applications that a user can access using the
17 web-based GUI. They are also used in different parts of the quote process to access
18 and/or modify information previously entered. This saves the user from having to go
19 backward page by page. According to an embodiment of the present invention, the user
20 can access quotes for personal-lines insurance by clicking on the ATLAS³ hyperlink in
21 the Quote & Issue section of the left column 710, which will then display a customer
22 information page such as the screen 800 shown in FIG. 8A.

23 According to one embodiment of the present invention, the layouts of the GUI
24 screens for the hyperlink pages are the same throughout. Each screen includes a
25 navigation tree 810, a navigation bar 820, and an action area 830. The navigation tree
26 810 is provided to help users move through the insurance quote and issue process. Its
27 function is similar to that of a file cabinet, with the main category indicated by a
28 specially marked folder icon; for example, a folder icon with a different color from the

1 rest of the other folders in the navigation tree. Any folder can be activated by the user
2 double clicking on it. Within each folder are additional icons that are “subcategories”.
3 Once the user opens a primary folder by double clicking on it, at least one secondary or
4 subordinate folder is displayed. The secondary folders can be activated by a single click.
5 The navigation tree 810 also provides users with the ability to see at a glance their
6 position in the quote and issue process. FIG. 9 shows a navigation tree 900 of the
7 present invention, wherein a special mark such as an arrow 920 indicates where a user is
8 in the workflow, while another special mark such as a check mark 910 identifies which
9 screens the user has completed.

10 Referring back to FIG. 8A, the navigation bar 820 provides additional features to
11 help users work their ways through the various insurance applications offered by the
12 insurance system via the web-based GUI. For instance, the navigation buttons, such as
13 the refresh button 825, on the navigation bar 820 will change dynamically as the users
14 move through the quote or issue workflow. The navigation buttons help users to see
15 what is next in the logical flow of the GUI screens. They also provide users with the
16 means to go back to a previous screen, by clicking on a navigation button with at least
17 the symbol “<-”, should they desire to do so for viewing and/or modification purposes.
18 The available navigation buttons on the navigation bar 820 will be determined by
19 whether the users have selected quote or issue. As indicated earlier, FIG. 8A shows the
20 Customer Information screen, which is the first screen of the insurance quote process.
21 Thus, based on where a user is in the quote process, the buttons may be enabled
22 (available for use) or disabled (not available). This reduces the potential for errors.
23 According to one embodiment of the present invention, the enabled buttons are
24 graphically different from the disabled buttons. For instance, as shown in FIG. 8A, the
25 enabled buttons have text that is distinguishable from text of the disabled buttons. The
26 buttons are labeled to help users understand the exact functions they perform. For
27 instance, the Search button 835 in the action area 830 searches for an existing customer;
28 the Refresh button 825 in the navigation bar 820 erases information entered on the

1 current screen or page; the Welcome button 827 returns the user to the Welcome screen
2 700 shown in FIG. 7; the Resume Flow button 828 in the navigation bar 820 allows re-
3 entry to the quote process; the Rate button 829 in the navigation bar 820 is enabled or
4 disabled depending on the position in the quote flow; and Save/Close button 826 saves
5 information and returns to the Welcome screen 700 shown in FIG. 7.

6 Another aspect of the web-based GUI of the present invention is the use of “hot
7 keys”, which is actually a keyboard translation of a mouse click. On any button with an
8 underlined letter, the user can press the Alt key on the keyboard and the underlined letter
9 at the same time to imitate the particular command of the button. For example, on the
10 Customer Information screen 800, the Alt and S key combination initiates the Search
11 function as if the user has clicked on the Search button 835.

12 In addition, the web-based GUI employs certain symbols on its screens to help
13 users know if a transaction is being processed. For instance, the e-globe icon 815 found
14 in the top right corner of each GUI screen or page spins when the user’s transaction is
15 processing. The Progress Bar 851, which is located in the status bar 850 will slowly fill
16 in a color from left to right when a new screen or page is being loaded. When the
17 Progress Bar 851 is completely filled in with the particular color, a new page will
18 display with its Progress Bar 851 becoming unfilled again. As for the text located at the
19 left most bar 852 of the status bar 850, it indicates what the web-based GUI and
20 insurance system are attempting to do.

21 As indicated earlier, the center of the screen is the action area 830 or work space.
22 This is where the user can enter information for a desired insurance quote or policy, with
23 different information asked on each GUI screen or page. Above the active area 830 is
24 the title area 840 of the page or screen. Each page has a unique title which is always
25 found in the title area 840. To initiate a quote, the user who is an insurance agent inputs
26 information on a customer into the Customer Information screen 800 shown in FIG. 8A.
27 According to one embodiment of the present invention, the Agent Code field 831 may be
28 pre-filled for the user. However, if the user has more than one agent code, the Agent

1 Code field will present a drop down list 832, as shown in FIG. 8B. The user can use the
2 down arrow on the right edge of the Agent Code field 831 to activate the drop down list
3 832 and highlight to select the desired agent code from the list.

4 Alternative to using a down arrow to access a drop down list in an input field, a
5 user can quick pick an entry by typing in the first letter of the item the user needs to
6 select. FIG. 8C shows the Customer Information screen 800 of FIG. 8A with a drop
7 down list 834 for the State field 833. As seen, Connecticut ranks third from the first
8 state, California, that starts with the alphabet letter C. Thus, for example, if the user
9 selects Connecticut from the list of states in the Customer Information screen 800 of
10 FIG. 8A, the user can click on the State field 833, the user can press the letter C on the
11 keyboard three times to have Connecticut as the entry for the State field 833.

12 Referring back to the insurance quote process, starting with the initial Customer
13 Information screen 800 of FIG. 8A, the user inputs customer information into the input
14 fields of the action area 830 in the manner explained above. This is shown as S4 in FIG.
15 3A. Once the customer information has been entered, the user can then click the Search
16 button 835 to search a customer database of the insurance system for a record of the
17 customer, based on the input customer information, to determine whether the customer is
18 a new or existing customer of the insurance system. After the search is done, additional
19 elements will appear in screen 800. In other words, based on the actions taken in screen
20 800, the initial GUI web page shown in the screen will be dynamically modified to
21 accommodate any additional elements. Specifically, a matching customer list resulting
22 from the customer search, such as the customer list box 860 shown in FIG. 8D, will
23 appear on the screen. If the search results in a hit on one or more existing customers,
24 their names will be listed in the customer list box 860, and the user can pick a name from
25 the customer hits that matches with the present customer, accesses the customer
26 information from the customer record in the database, and continue the insurance quote
27 process. The next screen to display would be a "Quote/Policy Selection" screen, which
28 follows the "Customer Information" screen 800 (after S4 in FIG. 3a) and is only

1 displayed when the customer is an existing customer or an existing customer with an
2 outstanding quote. At the "Quote/Policy Selection" screen, the user has the option to
3 modify the outstanding quote, begin a new quote, or issue a new insurance policy for the
4 customer. For beginning a new quote, the user is shown the next screen in FIG. 10A and
5 continues from there. For modifying an outstanding quote, the user is also shown the
6 next screen in FIG. 10A and continues from there; however, the screen in FIG. 10A and
7 subsequent screens in the insurance quote process would have input fields pre-filled, but
8 changeable, to the extent of the information already embedded in the outstanding quote.
9 For issuing a new insurance policy, the user is shown a next screen in FIG. 15 and
10 continues from there, with input fields pre-filled, but changeable, to the extent of any
11 outstanding quote for the insurance policy to be issued that the customer may already
12 have in the host insurance system.

13 Referring back to FIG. 8D, if the user deems that none of the listed customers
14 matches the present customer, the user has the option to add a record of the present
15 customer into the customer database of the insurance system. On the other hand, if the
16 search result comes up empty, an Import Quote button 836 will appear in the action area
17 830 along with the customer list box 860, as shown in FIG. 8D. However, no name will
18 be listed in the customer list box 860, except for a prompt 861 to add a new customer.
19 To add a new customer, the user is prompted to enter both the first and last name of the
20 new customer in field 865. According to one embodiment of the present invention, if the
21 user/insurance agent has already entered and saved other pertinent customer information
22 relating to the insurance quote in progress on the user's machine or information
23 database, the user has the option to import such information from the user's database
24 into the database of the insurance system by clicking on the Import Quote button 836.
25 Otherwise, the user will be prompted to enter in such information throughout the
26 insurance quote process.

27 To continue the insurance quote process, the user can click on the BasicPol->
28 navigation button 824. FIG. 10A shows the next screen 1000, which is entitled "Basic

1 Policy Information". This is shown as S5 in FIG. 3A. The screen 1000 presents the user
2 with the option to input additional information relating to the quote process. For
3 instance, the user can choose the type of insurance that the user wishes to generate a
4 quote in the line of business field 1020 and the jurisdiction or state for rating such quote
5 in the field 1010. As shown in FIG. 10A, auto insurance is chosen for a quote. This is
6 shown as S6 in FIG. 3A. FIG. 10A also shows that the rating state is set to "CT" or
7 Connecticut. This is because the address of the present customer is in Connecticut, the
8 insurance system automatically assumes that the user wishes to get an auto insurance
9 quote in the same state. However, if the user wishes to change the rating state, he or she
10 can do so by clicking on the Rating State hyperlink at field 1010.

11 Whatever line of business is chosen for an insurance quote in field 1020,
12 additional screen elements, including input fields 1030, 1040, and 1050, corresponding
13 to the chosen line of business will appear on screen 1000 of FIG. 10A. For instance,
14 when "AUTO 101" is chosen for field 1020, additional screen elements relating to
15 AUTO 101 appear as shown in FIG. 10B when the user clicks on the Default Template
16 button 1035. The additional screen elements provide prefill policy information based on
17 market characteristics; thus, reducing the number of data items to be entered by the user
18 to complete a quote. The user can also click on the Custom Template button 1045 to
19 display additional screen elements that have been customized by either the user or the
20 host insurance system. According to one embodiment of the present invention, the
21 screens or pages throughout the insurance quote process may be pre-filled with
22 information that the user has already entered or imported from his or her database (as
23 mentioned earlier). For instance, on certain screens the user can see the pre-filling being
24 performed as the screen begins to appear. The screen will "flash" when the pre-filling
25 information appears in the input fields, and the flashing will stop when the screen is
26 completely built, wherein the user can then add or modify information on the screen.
27 The pre-fill feature helps to streamline the amount of user keystrokes required. Because
28 the web-based GUI of the present invention is designed to only fill the screens with

1 specific information required for each quote or policy, the user will only see the relevant
2 fields in the quote or policy. An example of the pre-fill feature is seen in FIG. 10B in
3 the Transaction Type field 1030, Effective Date field 1040, Policy Term field 1050,
4 Pricing Track field 1060, and Writing Company 1070. In this instance, the Transaction
5 Type field is pre-filled to General/NB Quote because an insurance quote process is being
6 performed, where NB denotes New Business; the Effective Date may be pre-filled or
7 preset to the date on which the insurance quote is performed; the Policy Term field 1050
8 is set to six (06) months because that is the usual policy term for an auto insurance
9 quote; the Pricing Track field 1060 is set to "NO TIER" because there is not enough
10 information for the system to self determine the tier at this point in the insurance quote
11 process. Here, the tier indicates the value of the customer for a particular insurance
12 quote or policy. For instance, a bad driver would have a different tier number from a
13 good driver when applying as a customer for an auto insurance quote or policy. The
14 Writing Company 1070 is set to "NO WRITING COMPANY" also because there is not
15 enough information for the system to self determine the WRITING COMPANY at this
16 point in the insurance quote process. In screen 1000, the user has the option to enter
17 notes for the quote in Notes field 1080.

18 To continue onto the next screen for the insurance quote process, the user can
19 click on the Pol Dtl-> navigation button 1024. The resulting screen is the "Policy
20 Detail" screen 1100, which is shown in FIGs. 11A-B, with FIG. 11A showing the top
21 half of the screen 1100 and FIG. 11B showing the bottom half of the screen 1100 when
22 it is scrolled down. This is shown as S62 in FIG. 3B. The screen 1100 presents the user
23 with detailed customer information and detailed customer information and information
24 about any other companion insurance policies. Again, some of the input fields are pre-
25 filled with information that the user has already entered or imported from his or her
26 database. For instance, the customer's name and address are pre-filled with data from
27 FIG. 8D. Furthermore, if an Individual Financial Score (IFS) Report (i.e., credit history)
28 information of the customer has been imported from the user's database or the database

1 of the insurance system, then the input field 1120 is automatically checked and the input
2 fields 1130 and 1140 are pre-filled with the source of the IFS Report and where the
3 customer is eligible for the type of insurance being quoted based on the IFS Report. The
4 user then has the option to enter data into any other input fields in screen 1100 that have
5 not been pre-filled.

6 To continue the auto insurance quote process, the user can click on the Vehicles-
7 > navigation button 1124 to move to the next screen where information for the vehicle to
8 be insured can be viewed and entered. The continuance of the auto insurance quote
9 process are shown in S63-S67 of FIG. 3B and will be explained later with respect to
10 FIGs. 21-25 and 27 and S704-S709 and S712 of FIG. 4B. It should be noted that billing
11 information and endorsement, as shown in S710 and S711 of FIG. 4B, are not
12 considered in an auto insurance quote; thus, billing is not shown in FIG. 3B.

13 According to an embodiment of the present invention, the user can issue
14 insurance quotes for other types of insurance other than auto insurance. Referring back
15 to FIG. 10A, the user can change the type of insurance for an insurance quote by
16 modifying the information in the Line of Business field 1020. For instance, if the user
17 wishes to obtain an insurance quote for a homeowner insurance, the user can click on the
18 arrow to the right of the input field 1020 to obtain a drop down box with a list of
19 available types of insurance for a quote (not shown). The user can then select, for
20 example, "HOMEOWNERS" and proceed from there. This is shown as S7 in FIG. 3A.
21 The continuance of a homeowner insurance quote process are shown in S72-S77 of FIG.
22 3C and will be explained later with respect to FIGs. 33, 35-37, and 40 and S802, S804-
23 S807, and S810 in FIG. 4C. It should be noted that policy eligibility, endorsements, and
24 billing, as shown in FIGs 34, 38-39 and S803, S808, and S809 are not considered in an
25 insurance quote for a homeowner insurance. Thus, they are not shown in FIG. 3C.

26 Referring back to FIGs. 6A-B, according to another embodiment of the present
27 invention, the user can access applications for issuing insurance policies (rather than
28 insurance quotes) by highlighting an appropriate name, in this instance, "CDE"

1 (Common Data Entry), from the listed applications in the pop up box 610 as shown in
2 FIG. 6B. The process for issuing an insurance policy is now explained with reference to
3 the flowcharts shown in FIGs. 4A-C, with S100 and S200 in FIG. 4A showing the logon
4 screen and the selection of insurance policy issuance, respectively.

5 Once the user has successfully logged into CDE, he or she is greeted with a first
6 or welcoming screen 1200 that may be entitled "Personal Lines Desktop" as shown in
7 FIG. 12. This is shown as S300 in FIG. 4A. To begin the insurance policy issuance
8 process, the user can double click on the Policy Writing folder in the navigation tree
9 1210 to display a second screen 1300 entitled "Customer Selection" as shown in FIG.
10 13A. Here, the user can enter the information about the customer that is interested in
11 obtaining an insurance policy for a record search in the database of the insurance system.
12 This is shown as S400 in FIG. 4A. Using the search criteria field, the user has various
13 search criteria, such as name or address, that he or she can use to search for the customer
14 record. FIG. 13A shows that a name search is to be conducted, wherein the user can
15 enter the customer's last name in the Last Name field 1320. The user also has the option
16 to enter information in the State field 1330 and Zip Code field 1340 to narrow down the
17 search. Once information is entered into fields 1320, 1330, and/or 1340, the search
18 button 1350 is enabled, and the user can begin the search by clicking on the button. FIG.
19 13B shows an example of the "Customer Selection" screen of FIG. 13A being filled with
20 information in its input fields 1310, 1320, 1330, and 1340. If the customer search is
21 successful, a matching customer list similar to the customer list box 860 shown in FIG.
22 8D will be displayed on the screen 1300. Thus, the user can pick a name from the
23 customer list that matches with the present customer, access the customer information
24 from the customer record in the customer database of the insurance system, and continue
25 with the process of issuing an insurance policy to the customer. The next screen to
26 display would be a "Quote/Policy Selection" screen. As with the insurance quote
27 process, the "Quote/Policy Selection" screen is displayed after the "Customer Selection"
28 screen 1300 only when the present customer is an existing customer or an existing

1 customer with an outstanding quote. At the "Quote/Policy Selection" screen, the user
2 has the option to issue a new insurance policy to the customer based on new information
3 to be gathered from the user. For this option, the user is shown the next screen in FIG.
4 15 and subsequent screens as will be described later. At the "Quote/Policy Selection"
5 screen, the user also has the option to modify or use an outstanding quote of the
6 customer to issue a new insurance policy for the customer. For this option, the user is
7 also shown the next screen in FIG. 15 and continues from there; however, the screen in
8 FIG. 15 and subsequent screens will have input fields pre-filled, but changeable, to the
9 extent of the information already embedded in the outstanding quote.

10 Referring back to FIG. 13B, if the customer search is unsuccessful, the GUI will
11 display the "Customer Insert" screen 1400 with blank input fields, except for the
12 information that the user has already entered. This is shown as S500 in FIG. 4A. For
13 instance, the Name input field will only have the customer's last name, and the State
14 field 1440 and the Zip code field 1450 are pre-filled with the same entries shown in FIG.
15 13B. The user can then enter additional information into the Name field 1410, Street
16 field 1420, City field 1430, and phone field 1460. The Insert Customer button 1470 will
17 also be enabled to allow the user to click on it and insert information of the new
18 customer into the database of the insurance system to create a new record for the
19 customer. Now, the user can proceed with the insurance policy issuance process by
20 gathering and compiling the factors or determinants desired for the calculation and
21 issuance of an insurance policy. The screens shown in FIGs. 15-18 are next provided to
22 the user for this purpose. The user can proceed to the next screen by clicking on the
23 Determ-> navigation button 1480.

24 FIG. 15 shows the next screen 1500, entitled "CDE Determinants – Initial Page".
25 Again, screen 1500 includes some input fields that have been pre-filled and some that
26 require entry by the user. For instance, the Rating State field 1510 may be pre-filled
27 while the other input fields are entered by the user. FIG. 16 shows the next screen 1600,
28 entitled "CDE Determinants – Transaction and Policy Type," that the user can access by

1 clicking on the Continue button 1530 in screen 1500 of FIG. 15. In screen 1600, the
2 input fields of screen 1500 appear as hyperlinks, indicated by underlined text, with the
3 pre-filled or entered information next to them. Thus, the pre-filled and entered
4 information in screen 1500 can be modified by clicking on the hyperlinks in screen
5 1600. Screen 1600 further displays additional input fields 1650, 1660, and 1670 with
6 pre-filled information that can be modified by the user.

7 FIG. 17 shows the next screen 1700, entitled "CDE Determinants – Pricing
8 Level," that the user can access by clicking on the Continue button 1630 in screen 1600
9 of FIG. 16. Again, the cumulative input fields found in screens 1500 and 1600 also
10 appear in screen 1700 as hyperlinks, indicated by underlined text, with the associated
11 pre-filled and entered information. Thus, such information can be modified by clicking
12 on the hyperlinks. Screen 1700 further displays an additional Pricing Level field 1710
13 for entry by the user.

14 FIGs. 18A-B show the next screen 1800, entitled "CDE Determinants" that the
15 user can access by clicking the Continue button 1730 in screen 1700 of FIG. 17. Screen
16 1800 includes the hyperlinks and associated information displayed in screen 1700 and an
17 additional hyperlink for the Pricing Level field 1710. Furthermore, screen 1800 includes
18 additional input fields for user input of information relating to the issuance of the
19 insurance policy. The aforementioned determinant screens are shown as S600 in FIG.
20 4A. Because the insurance type selected in input field 1520 of FIG. 15 is auto insurance,
21 the process to issue an insurance policy continues through S700 of FIG. 4A and onto
22 FIG. 4B.

23 Now that information for the CDE determinants have been gathered for a selected
24 insurance type in the previous screens, the user can proceed to the policy detail section
25 of the insurance policy issuance process to verify the customer information and enter
26 additional information relating the insurance policy to be issued. This is shown as S702
27 in FIG. 4B. FIGs. 19A-C show various sections of a "Policy Detail" screen 1900 as it is
28 scrolled down, which the user can access by clicking on the Pol/Dtl-> navigation button

1 1830 found in screen 1800 of FIGs. 18A-B. Screen 1900 is similar in appearance to the
2 “Policy Detail” screen 1100 of FIGs. 11A-B for the insurance quote process described
3 earlier. As with screen 1100, screen 1900 displays detailed customer information and
4 information about any other companion insurance policies. Again, some of the input
5 fields are pre-filled with information that the user has already entered and/or received
6 from the insurance system database. For instance, the customer’s name and address are
7 pre-filled with data from screen 1400 in FIG. 14. If the user check any of the boxes for
8 Residence Address and Previous address, additional input fields (not shown) will be
9 displayed on the same screen for the user to enter in such information. Furthermore, if
10 an IFS Report information of the customer has been imported from the user’s database
11 or the database of the insurance system, then the input field 1920 is automatically
12 checked and the input fields 1930 and 1940 are pre-filled with the source of the IFS
13 Report and where the customer is eligible for the type of insurance being quoted based
14 on the IFS Report. The user then has the option to enter data into any other input fields
15 in screen 1400 that have not been pre-filled.

16 The user can now perform a determination on the eligibility of the customer for
17 the insurance policy being issued. This is shown as S703 in FIG. 4B. FIGs. 20A-B
18 show the various sections of a “Policy Eligibility” screen 2000 as it is scrolled down.
19 The user can access the screen 2000 by clicking on the Eligibility-> navigation button
20 1970 found in screen 1900 of FIGs. 19A-C. Screen 2000 displays a number of input
21 fields relating to information desired for the determination of policy eligibility, and these
22 input fields are self explanatory.

23 Because an auto insurance policy has been selected for issuance in screen 1500 of
24 FIG. 15, a Vehicle-> navigation button 2010 appears in the “Policy Eligibility” screen
25 2000. The user can now proceed with the insurance policy issuance process by clicking
26 on button 2010, which will display the “Vehicle – Determinants” screen 2100 as shown
27 in FIG. 21. This is shown as S704 in FIG. 4B. The screen 2100 displays a table 2120
28 that lists all vehicles, with the necessary identification, associated with the customer and

1 the insurance policy to be issued. This list may be part of the customer information
2 retrieved from the insurance system database when the user successfully found the
3 customer records in the database. For instance, the table 2120 shows that a 1996 Jeep
4 Cherokee with VIN 1j4f68s1t175818 with estimated annual mileage of 11,000 miles is
5 listed for the customer. The user can highlight the row listing the 1996 Jeep Cherokee
6 vehicle and click on it to activate the record of that particular vehicle for additional
7 information and modification. When that is done, a new screen 2200 entitled "Vehicle –
8 Subject" is displayed. FIGs. 22A-B show the various sections of screen 2200 as it is
9 scrolled down. As seen, the selected vehicle along with the highlighted text in the
10 vehicle row are now in placed in the center of the action area of screen 2200.
11 Furthermore, there are also displayed a number of input fields, some are blank and some
12 with pre-filled information relating to the selected vehicle. Here, the user has the option
13 to modify the pre-filled information and to enter additional information into the blank
14 input fields.

15 Referring back to FIG. 21, if there are more than one vehicle listed in table 2120,
16 the user can highlight each row and modify and add information as needed. If there is no
17 vehicle listed in table 2120, the user can add vehicle information via the input fields
18 2130, 2140, and 2150 and go through the process described earlier with regard to FIGs.
19 22A-B and clicking on buttons 2210, 2220, and 2230.

20 With the vehicle determinants obtained from the previous screens, the user can
21 now move on to information about operators of the vehicle. This is done by the user
22 clicking on Operator-> navigation button 2250 in screen 2200 of FIGs. 22A-B. The
23 resulting "Operator Information" screen 2300 is shown in FIGs. 23A-B as it is scrolled
24 down. This is shown as S705 in FIG. 4B. The screen 2300 includes a table 2320 listing
25 the users or operators, with the necessary identification, of the particular vehicle
26 identified in screen 2200 of FIGs. 22A-B (in this case, a 1996 Jeep Cherokee). This list
27 may be part of the customer information retrieved from the insurance system database
28 when the user successfully found the customer records in the database. For instance,

1 table 2320 shows that Paula Aprilupgrade with date of birth of 06/03/1966 and license
2 number 57647658 is listed as the operator of the 1996 Jeep Cherokee. If the user wishes
3 to add additional drivers to the list of operators in table 2320, the user can enter
4 operator's information into the input fields displayed below table 2320 and click on the
5 Add Driver button 2330. Likewise, if the user wishes to remove an operator's name
6 from the list in table 2320, the user can highlight the name and click on the Delete button
7 2350. If the user wishes to modify information about an operator from the list in table
8 2320, the user can highlight on the operator's name in the list and double click on the
9 highlighting row. The operator's information would then be pre-filled in the input fields
10 displayed below table 2320, and the user can go into each input field and modify the
11 information. Once the modification is complete, the user can click on the Modify button
12 2340 to save the modification.

13 The next screen that the user accesses is the "Percentage of Use" screen 2400
14 shown in FIG. 24, which will be displayed upon the user clicking on the Percent Use->
15 navigation button 2370 in screen 2300 of FIG. 23. This is shown as S706 in FIG. 4B.
16 Screen 2400 shows the percentage of use of each of the operators listed in table 2320 of
17 screen 2300. If there is only one operator listed in table 2320, the percentage of use for
18 that sole operator is pre-filled with the number 100 in input field 2410 because it is
19 assumed that the operator has 100% use of the vehicle. If there are two operators listed
20 in table 2320, two names will be listed with two input fields 2410, and the pre-filled
21 percentage of use for each operator is cut in half to 50, and so on. Of course, the user
22 has the option to modify the percentage value in any one of the input field 2410.

23 The next screen for the user to access is the "Accidents/Violations and
24 Inexperience" screen, like that shown in FIG. 50 for a water vessel insurance policy, by
25 clicking on the Acc/Viol-> navigation button 2420. This screen provides entry and
26 display of information relating to any accidents and/or traffic violations in which the
27 listed vehicle operators in FIG. 24 have been involved. This is shown as S707 in FIG.
28 4B. The next screen, which the user may access by clicking on the Loss -> navigation

1 button on the "Accidents/Violations and Inexperience" screen, is the "Loss Information"
2 screen, like that shown in FIG. 51 for a water vessel insurance policy. This is shown as
3 S708 in FIG. 4B. This screen provides entry and display of information relating to any
4 loss that was incurred as the result of the accidents and/or traffic violations listed in the
5 previous "Accidents/ Violations and Inexperience" screen.

6 The next screen for the user to access is the "Coverages" screen 2500 shown in
7 FIGs. 25A-B, as it is scrolled down. This is shown as S709 in FIG. 4B. This screen can
8 be accessed by the user clicking on the. The screen 2500 includes a table 2510 listing
9 the coverages set for the insurance policy being issued. The user can modify the listed
10 insurance coverages via the input fields 2520 displayed below the table 2510 and click
11 on the Modify button 2530. Once the user is satisfied with the coverages listed in table
12 2510, the user can proceed to an "Endorsement" screen by clicking on the Endorse ->
13 navigation button 2540, like that shown in FIG. 38 for a homeowner insurance policy
14 and described later. This is shown as S710 in FIG. 4B.

15 Next, the user can proceed to the billing information by clicking on the Resume
16 Flow navigation button on the "Endorsement" screen. FIG. 26 shows the resulting
17 "Billing" screen 2600, wherein the user can enter into the various input fields billing
18 information such as billing plan, downpayment amount, customer account number, etc.
19 This is shown as S711 in FIG. 4B. It should be noted that unlike the insurance policy
20 issuance process, the insurance quote process does not include the billing screen 2600.
21 Once billing information is completed in the various input fields 2610, the user can
22 access the next screen by clicking on the Misc-> navigation button 2620. FIGs 27A-B
23 shows the resulting "Rating Results" screen 2700 as it is scrolled down. This is shown
24 as S712 in FIG. 4B. The screen 2700 displays a summary of the coverages for the
25 insurance policy to be issued and the insurance premium for such coverages in the top
26 half of the screen. The bottom half of the screen 2700 displays Information to close,
27 which includes other self-explained information relating to the insurance policy, with
28 input fields for the user to modify and/or add information. Here, the user also has the

1 option to view IFS Information via button 2710, view pricing details of the insurance
2 policy via button 2720, or proceed to issuance of the insurance policy via button 2730.
3 A IFS Information screen comprises a credit report on the customer. A pricing details
4 screen is similar to the "Rating Results" screen 2700, but with additional information
5 such as insurance policy number. An issuance screen provides standard information
6 relevant to the issuance of an insurance policy. It should be noted that screen 2700 is
7 also included in the insurance quote process; however, unlike the insurance policy
8 issuance process, the information to close in the bottom half of screen 2700 does not
9 appear in the insurance quote process.

10 What has been described thus far with regard to FIGs. 15-27 was an example of a
11 process for issuing an automobile insurance policy based on a selection in the input field
12 1520 of FIG. 15, in accordance one embodiment of the present invention. The process
13 for issuing a personal-lines insurance policy other than an auto insurance policy is also
14 similar. For instance, a process for issuing a homeowner insurance policy is shown in
15 FIGs. 28-40 with reference to the flowcharts shown in FIGs. 4A and 4C. The screens in
16 FIGs. 28 and 29 are similar to those in FIGs. 15 and 16 and described likewise. This
17 juncture is shown as S600 and S800 in FIG. 3A. Additionally, the homeowner insurance
18 policy includes a "CDE Determinants – Premium Level" screen 3000 shown in FIG. 30.
19 This screen enables the user to set the premium level 3010 for the insurance policy. The
20 screens in FIGs. 31-34 are similar to those FIGs. 17-20 and described likewise. This
21 juncture is shown as S802 and S803 in FIG. 3C.

22 The next screen for the homeowner insurance policy is the "Residence
23 Information" screen 3500 shown in FIGs. 35A-B as it is scrolled down. This is shown
24 as S804 in FIG. 4C. This screen is similar to the "Vehicle – Subject" screen 2200 shown
25 in FIGs. 22A-B for the auto insurance policy, except screen 3500 is for information
26 relating to the residence to be included in a homeowner insurance policy whereas screen
27 2200 is for information relating to the vehicle to be included in an auto insurance policy.
28 In place of FIGs. 23 and 24, the homeowner insurance policy includes a "Replacement

1 Cost” screen 3600 as shown in FIG. 36. This is shown as S805 in FIG. 4C. Here, the
2 user has the option to input information relating to the cost of replacement for a home in
3 the event the insured home is to be replaced under the homeowner insurance policy
4 being issued. The next screen that the user accesses is a “Loss Information” screen, like
5 that shown in FIG. 51 for a water vessel insurance policy, by clicking on the Loss ->
6 navigation button on the “Replacement Cost” screen. This is shown as S806 in FIG. 4C.
7 The “Loss Information” screen provides entry and display of information relating to any
8 loss that the customer has incurred at the residence listed in FIGs. 35A-B.

9 The next screens that the user accesses are shown in FIGs. 37A-B, which are
10 similar to those in FIGs. 25A-B and described likewise. This is shown as S807 in FIG.
11 4C. The homeowner insurance policy also includes an “Endorsements” screen 3800
12 shown in FIG. 38, where the user has the option to add endorsements to the policy. This
13 is shown as S808 in FIG. 4C. The next screens in FIGs. 39-40 are similar to FIGs. 26-27
14 and described likewise. This juncture is shown as S809 and S810.

15 The process for issuing an insurance policy for a water vessel is also similar to
16 the process for issuing an auto insurance policy or a homeowner insurance policy, as
17 shown in FIGs. 41-55. For instance, the screens in FIGs. 41 and 42 are similar to those
18 in FIGs. 15 and 16 and described likewise. The screens in FIGs. 43-45 are similar to
19 those shown in FIGs. 18-21 and described likewise. The next screens for an insurance
20 of a water vessel insurance policy are the the “Vessel” screens shown in FIGs. 46-47.
21 These screens are function similarly to the “Vehicle – Determinants” and “Vehicle –
22 Subject” screens shown in FIGs. 21-22 for an auto insurance policy in that they are used
23 to collect information on the vessel to be insured. The screens shown in FIGs. 48-49
24 function similarly to the screens in FIGs. 23-24 and described likewise. Additionally,
25 there is an “Accidents/Violations and Inexperience” screen in shown in FIG. 50 and a
26 “Loss Information” screen in FIG. 51 relating to the vessel operators listed in the screen
27 shown in FIGs. 48A-B. The screen shown in FIG. 52 is similar to the screen shown in
28 FIGs. 25A-B and described likewise. The screen shown in FIG. 53 is similar to the one

1 shown in FIG. 38 and described likewise. The screens in FIGs. 54-55 are similar to
2 those shown in FIGs. 26-27 and described likewise.

3 According to one embodiment of the present invention, the web-based GUI
4 provides users with the ability to print insurance industry forms for insurance policies
5 wherever the user can access the GUI. To print a form, a user can select Print from
6 either the Quote/Policy Selection page mentioned earlier or from a Print folder 4120 in
7 the navigation tree as shown in FIG. 56A. The resulting screen is a "Print Selection"
8 screen 4100. This screen also allows the user to print personalized proposals for his or
9 her customers. This is done by selecting Agent Proposal from the Print option drop-
10 down list in the input field 4130, as shown in FIG. 56B. The user can even type
11 additional information about the proposal directly into the text box that will also print on
12 the forms. Professional quality documents may then be printed to an office printer
13 where the user is situated, and the user has the ability to edit and personalize the form
14 accordingly.

15 Although only a few exemplary embodiments of this invention have been
16 described in detail above, those skilled in the art will readily appreciate that many
17 modifications are possible in the exemplary embodiments without materially departing
18 from the novel teachings and advantages of this invention. Accordingly, all such
19 modifications are intended to be included within the scope of this invention as defined in
20 the following claims. Furthermore, any means-plus-function clauses in the claims
21 (invoked only if expressly recited) are intended to cover the structures described herein
22 as performing the recited function and all equivalents thereto, including, but not limited
23 to, structural equivalents, equivalent structures, and other equivalents.

24